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Discovery of the Family Boreidae (Mecoptera) from Japan, with Description of a New Species

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Abstract *Boreus jezoensis* sp. nov. is described from Hokkaido as the first species of the family Boreidae from Japan. A key to species of the Far East boreids is provided.

Key words: Mecoptera; Boreidae; *Boreus jezoensis*; new species; Hokkaido; Japan.

The Boreidae are a small family of the Order Mecoptera comprising small, dark colored and flightless scorpion flies in the Holarctic Region. They are known to feed on mosses, usually appear in winter and often leap to move on snow. This family was well monographed by PENNY (1977), who classified 22 species in 2 genera, and a genus and 3 species have subsequently been described by RUSSELL (1979) and PLUTENKO (1984, 1985).

In this paper, a new species is described from Hokkaido as the first species of the family from Japan based on 7 specimens captured in summer by pitfall trapping with 20% acetic acid solution as attractant.

Boreus jezoensis sp. nov.

[Ezo-yuki-shiriage]

Boreus sp.: HORI, 1995, Report on the natural environment of the "Excellent natural area in Hokkaido" (Taisetsuzan-Nisshou District): 255–256.

Described from 3 males and 4 females (Figs. 1–2).

Male. Head black with bluish reflection; rostrum and palpi reddish brown; vertex finely alutaceous, with scattered fine setiferous punctures; forehead be-

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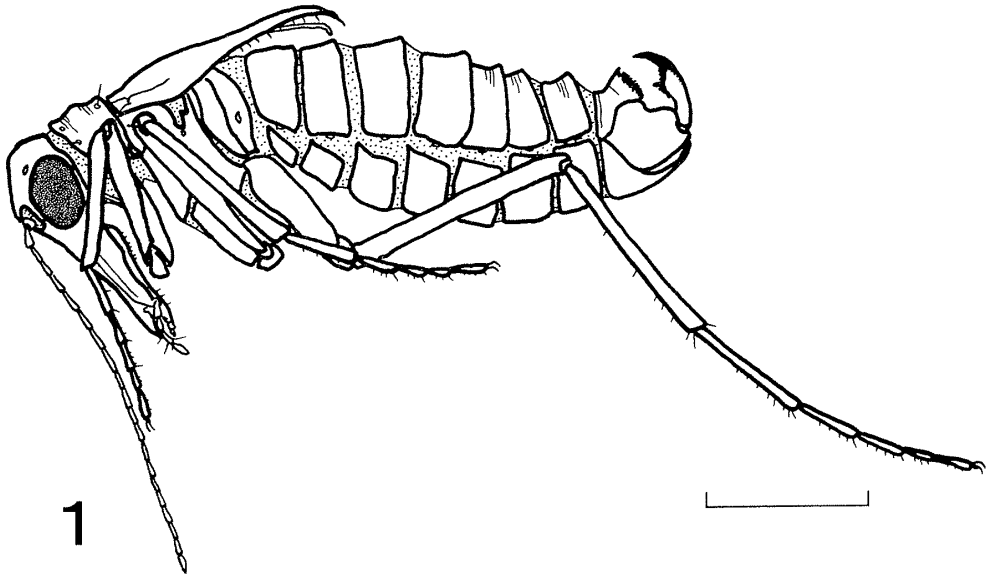
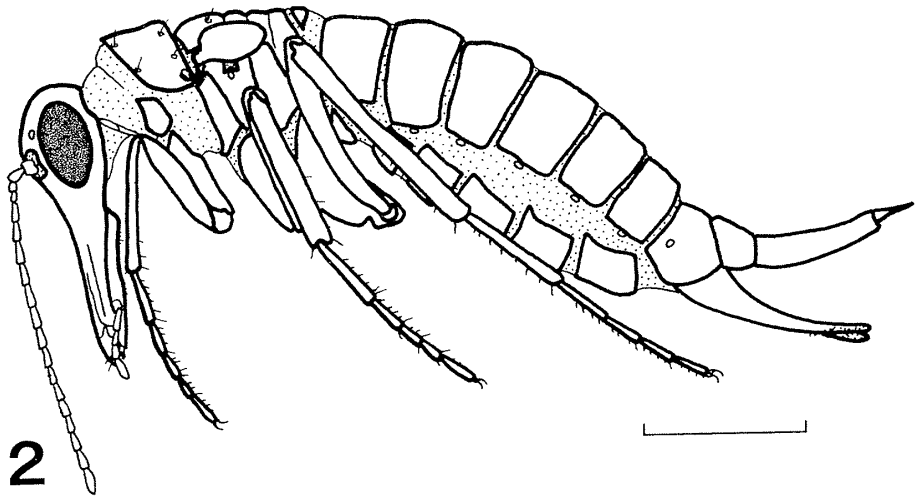




Figs. 1–2. *Boreus jezoensis* sp. nov. —— 1, male, lateral view. 2, female, lateral view. Scales 10 mm.

tween and in front of eyes and base of rostrum with dense setiferous punctures, their interstices narrower than the diameter, finely alutaceous. Antennae with 21–23 segments, basal 10–11 segments light brown, others black. Ratio of length of maxillo-labial complex to rostrum = 0.82–0.85 (Fig. 3).

Thoracic dorsum reddish brown, pleura blackish brown to black; pronotum transversely striolate and wrinkled on entire surface, with scattered fine setae,

denser laterally, with 2 or 4 long, dark, spinelike bristles on anterior margin and 4 or 6 bristles on posterior margin; meso- and metanota without bristles. Forewings brown, paler basally and darker apically, densely provided with transverse setiferous punctures and somewhat wrinkled, weakly constricted behind base externally, broadest at basal 1/10, then tapered posteriorly and acuminate at apex, with 8 to 12 outer and 13–16 stout inner spines (Fig.4). Hindwings lanceolate, with 8 to 11 short spines on the underside.

Legs yellowish brown, with a stout spine on each femur at apex; fore tibia with 2 rows of 5–7 long bristles along ventral margin on distal half and two pairs of bristles at apex dorsally, tibial spurs pale; mid and hind tibiae as in fore one, but dorso-apical bristles 1 paired (Fig. 5).

Abdomen black with cupreous reflection on segments II to VII, VIII brownish black, IX reddish brown, segments II to VIII weakly punctate, transversely striolate and wrinkled on entire surface, tergites II and III without ridge, segments VIII and IX with unfused tergite and sternite (Fig. 6). Tergite IX almost trapezoidal, straight apically, with narrow median cleavage; hood strongly sclerotized, dark brownish in contrast to pale surrounding area, crescent with bisinuate caudal margin and triangularly pointed in the middle, laterally with sharp projections extending caudad far beyond the level of median point; caudal area with about 65 denticles on each lobe (Figs. 7–8). Sternite IX convex ventrally, conical, with slight notch at apex, reaching base of dististyles (Fig. 9). Dististyles with about 20 spines arranged along dilated margin to base of dististylar claw, basal lobe obliquely truncate at apex, separated from base of dististyle by cleft (Figs. 10–11).

Body length: 3.0–3.8 mm in dry condition, 4.5 mm in alcohol.

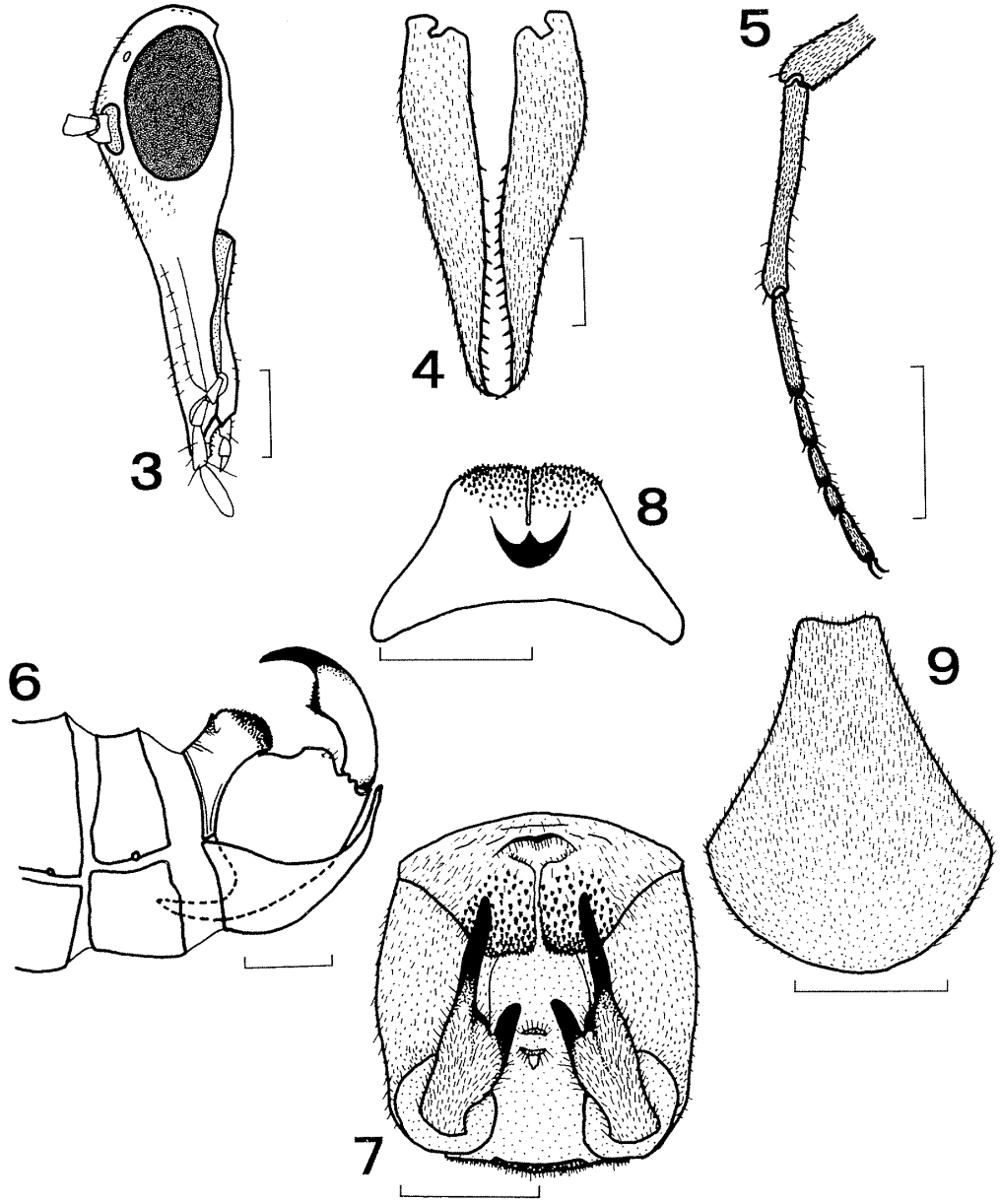
Female. Wings ovate, covering hind wings, reaching anterior margin of abdominal tergite I (Fig. 12). Scutella of meso- and metanota each with 2 bristles. Tergite VII truncate at hind margin; tergite and sternite VIII not fused, tergite VIII rapidly narrowed posteriorly, widely concave along fore and hind margins; tergite IX wider than long, straight at fore margin, shallowly concave at hind margin; tergite X about 4 times as long as IX; ovipositor to rostrum ratio = 0.92–0.95; sternite VIII with spines on apcal 1/3 of hypovalves; cerci evenly tapering to a point (Figs. 13–15).

Body length: 5.1–6.6 mm in alcohol.

Infraspecific variation: Antennal segments and wing spines variable in number as described above. Prothoracic bristles may fall off, but their sockets can be traced by careful examination.

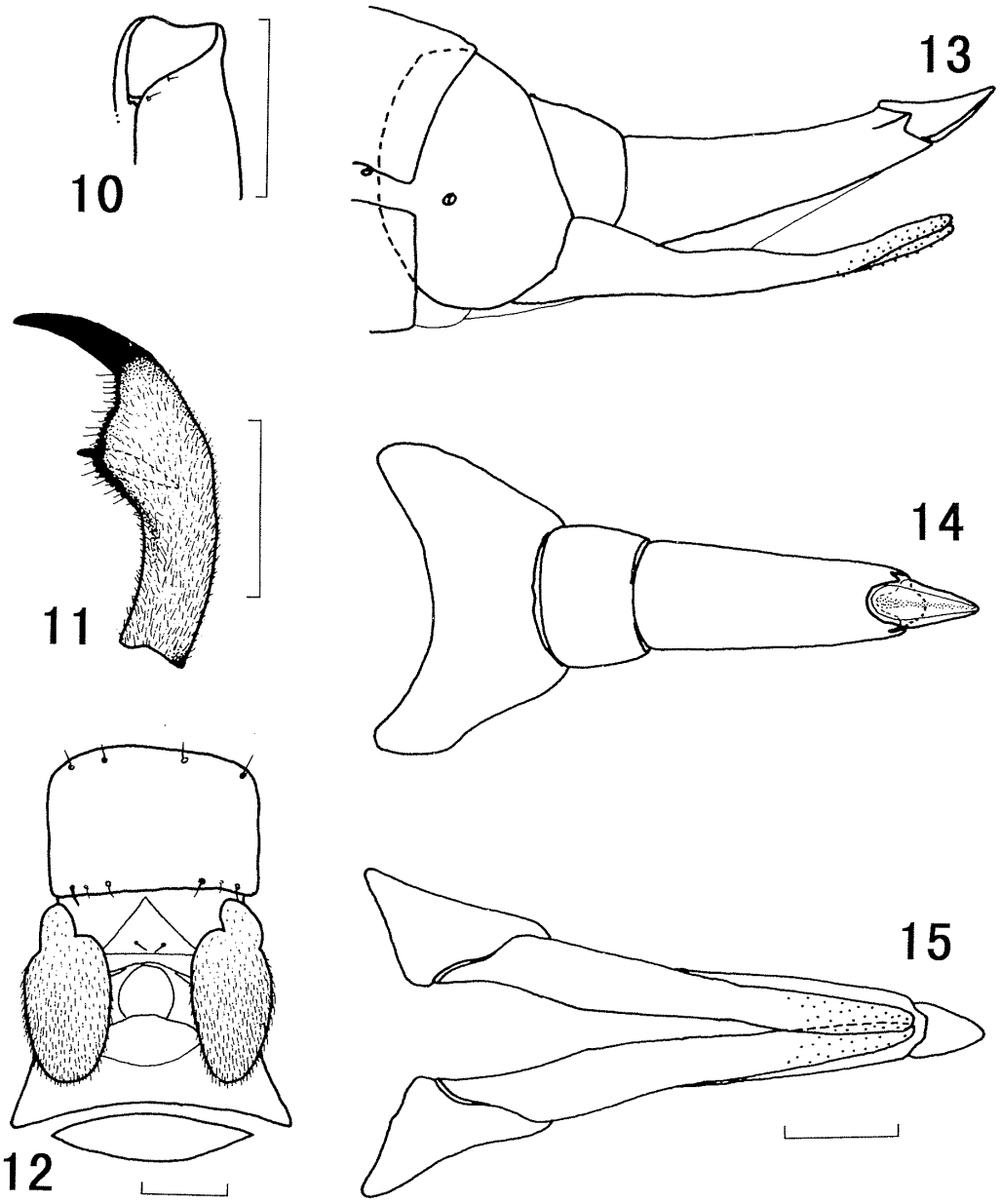
Locality. Japan (Hokkaido).

Type material. Holotype male (Type No. 3004, Kyushu Univ.), 9–20. vii. 1993, Mt. Hirayama (alt. 1,450 m), Shirataki Village, Hokkaido, S. HORI leg. Paratypes, 2 males and one female, same data as holotype; 2 females, 20. vii-9.



Figs. 3–9. *Boreus jezoensis* sp. nov., male. —— 3, head, lateral view. 4, forewings, dorsal view. 5, left foreleg, dorsal view. 6, tip of abdomen, lateral view. 7, tip of abdomen, dorso-caudal view. 8, ninth tergum, dorsal view. 9, ninth sternum, ventral view. Scales 0.3 mm.

viii. 1993, same locality as holotype; 1 female, 20. vii-9. viii 1993, same mountain as holotype (alt. 1,650 m), all collected by S. HORI. The holotype and a female paratype are deposited in the Entomological Laboratory, Faculty of Agriculture, Kyushu University, and other paratypes are in the Hokkaido Institute of Environmental Sciences.



Figs. 10–15. *Boreus jezoensis* sp. nov. —— 10, top of male coxopodite, dorsal view. 11, male dististyle, lateral view. 12, female thorax, dorsal view. 13, female ovipositors, lateral view. 14, female ovipositors, dorsal view. 15, female ovipositors, ventral view. Scales 0.3 mm.

Note. All specimens were captured by pitfall trapping with 20% acetic acid solution as attractant set in a thick carpet of mosses only a few feet from the edge of snow bed in the subalpine zone of Mt. Hirayama (alt. 1,450 to 1,650 m), Shirataki-mura, Monbetsu-gun, Hokkaido.

Comparison. From 5 known species occurring in Russian Far East, *B.*

semenovi, *tardokijanensis*, *jacutensis*, *orientalis* and *sjoestedti* (only known by a female), the present new species can be separable by the following key in male.

Key to males of the East Palearctic *Boreus*

1(2) Hood of tergite IX notched in the middle of caudal margin. ..... *B. jacutensis* PLUTENKO, 1984

2(1) Hood of tergite IX bisinuate at caudal margin and produced triangularly into the middle.

3(4) Tergite IX with side and caudal margins continuously and evenly arcuate, basal margin evenly concave ..... *B. semenovi* PLIGINSKY, 1930

4(3) Tergite IX subtruncate or broadly rounded at caudal margin of each lobe, basal margin at most shallowly concave.

5(6) Tergite IX slightly narrowing caudad from base and broadly rounded at caudal margin of each lobe; hood subtriangular with bisinuate caudal margin. ..... *B. orientalis* MARTYNOVA, 1954

6(5) Tergite IX rapidly narrowing caudad and subtruncate at caudal margin, hood evenly rounded at anterior margin.

7(8) Hood of tergite IX with sharp lateral projections, which being short and not extending caudad beyond the level of median point. ..... *B. tardokijanensis* PLUTENKO, 1985

8(7) Hood of tergite IX with slender lateral projections, which being long and exceeding caudad far beyond the level of median point. ..... *B. jezoensis* HORI et MORIMOTO, sp. nov.

In female, the present new species is similar to *B. orientalis* by its slender ovipositor, but is easily distinguished from the known Far East species by the presence of bristles on margins of pronotum, if this character is stable as used by PENNY, 1977.

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